Woodburn Transportation System Plan

Volume I
Text

Prepared for:

City of Woodburn
and the
Oregon Department of Transportation

October 2005

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SECTION 5

Alternatives Analysis

The Technical Advisory Committee (TAC) selected three alternatives to address deficiencies identified as part of the existing conditions and future no build analyses. This section summarizes the results of the multimodal alternatives analyses conducted for these alternatives.

Alternative 1: Minimum Capacity Improvements

This alternative primarily includes those improvements contemplated as part of the Woodburn Interchange Environmental Assessment as well as those improvements anticipated as part of ongoing land use applications. As such, this alternative includes the following capacity and connectivity improvements:

- Widening Oregon 214 to include four through travel lanes (two per direction) between Woodland Avenue and Oregon Way
- Providing turn lanes at intersections along Oregon 214 between Woodland Avenue and Oregon Way
- Rebuilding the I-5 on-ramps and off-ramps
- Extending Evergreen Road to Parr Road
- Extending Stacy Allison Drive to Parr Road
- Constructing a new collector or service facility between the Evergreen Road and Stacy Allison Drive extensions
- Widen Oregon 99E between Lincoln Street and south City limits

This alternative is conceptually represented in Figure 5-1 and does not represent the preferred alignments or locations.

Alternative 2: Full Widening of Oregon 214 and Construction of the South Arterial

In addition to the improvements included in Alternative 1, Alternative 2 consists of the following:

- Widening of Oregon 214 to a full five-lane section between Butteville Road and Oregon 99E
- Constructing a new loop ramp connection between Oregon 214 and Front Street in the southwest quadrant of the existing intersection
- Upgrading 5th Street to access street standards

- Extending and upgrading Brown Street to the South Arterial
- Upgrading the Crosby Road corridor commensurate with minor arterial standards
- Constructing a "South Arterial" between Butteville Road and Oregon 99E. As part of the South Arterial construction, Parr Road would be terminated at the Stacy Allison Drive extension and Evergreen Road would tie into the South Arterial.

This alternative is conceptually represented in Figure 5-2 and does not represent the preferred alignments or locations.

Alternative 3 (Policy): Full Capacity and Connectivity Improvements

Alternative 3 is a policy-driven alternative that was developed to determine improvements located outside of the UGB that would benefit the overall transportation system (i.e., State, County and City), complementing Alternatives 1 and 2. These projects are of priority to the City but need to be planned for and incorporated into the Marion County Transportation System Plan. In addition to the capacity and connectivity improvements identified in the first two alternatives, Alternative 3 consists of the following improvements :

- Extending the South Arterial from Oregon 99E to Oregon 214, providing a direct alternative route to the Oregon 214/I-5 interchange for trips originating outside of the Woodburn UGB
- Extending Crosby Road to the Goudy Gardens/Oregon 99E intersection

This alternative is conceptually represented in Figure 5-3 and does not represent the preferred alignments or locations.

Urban Growth Boundary Assumptions for Alternatives

Roadway facilities shown outside the UGB are recommended, not planned facilities in the TSP, and are logical extensions and improvements to the planned roadway network. Land use decisions to authorize these as planned facilities and improvements would occur as part of a subsequent UGB amendment adding these areas or a subsequent amendment to the TSP.

Environmental Issues

In addition, at this time, none of the improvements identified in any of the alternatives have known environmental concerns or conditions that would influence the selection of a preferred alternative.

Alternatives Evaluation

The evaluation of each alternative is summarized below.

Roadway System Performance

Based on direction provided by the TAC, the performance of the roadway system was assessed for each alternative using traffic volume forecasts prepared by ODOT's TPAU for Land Use Scenario 3. Section 4 documented the methodology used to calculate roadway and intersection volumes based on information prepared by TPAU.

Year 2020 weekday p.m. peak hour roadway segment volumes for Alternatives 1 through 3 are provided in Figures 5-4, 5-5, and 5-6, respectively. Table 5-1 provides a comparison of traffic volumes anticipated on key roadway segments (for example, those that were identified to operate near or over capacity in the No Build Condition or other facilities anticipated to experience significant increases in traffic volumes, as compared to existing conditions).

TABLE 5-1
2020 Weekday p.m. Peak Hour Roadway Volumes

Roadway Segment	No Build	Alternative 1	Alternative 2	Alternative 3
Oregon 219 west of I-5	1,300	1,650	2,100	1,850
Oregon 214 east of Oregon Way	2,100	2,430	3,100	2,400
Oregon 214 west of Oregon 99E	2,075	1,780	2,800	2,200
Oregon 99E south of Oregon 214	2,625	2,575	2,575	2,525
Front Street north of Hardcastle	650	600	350	450
Parr Road west of Settlemier	1,300	1,300	400	400
Evergreen Road south of Oregon 214	600	750	800	825
Settlemier Ave south of Oregon 214	1,200	1,500	1,525	1,400
Crosby Road west of Boones Ferry Road	950	600	250	475
Butteville Road south of Oregon 219	1,525	1,350	1,525	1,375
Southern Arterial East of Butteville	N/A	N/A	1,000	1,000
Southern Arterial West of Oregon 99E	N/A	N/A	1,500	1,500
Southern Arterial East of Oregon 99E	N/A	N/A	N/A	650

Alternative 1

Table 5-1 shows that under Alternative 1, during the weekday p.m. peak hour a majority of the roadway segments would experience an increase in vehicular volumes. The volumes shown under the No Build condition reflect traffic diverting onto facilities other than Oregon 214. As the capacity increases as a result of the widening on Oregon 214 between Woodland Avenue and Oregon Way, traffic volumes would divert back to Oregon 214. Traffic volumes would decrease on Crosby Road, Butteville Road, and Front Street because of new connections provided by extending Stacy Allison Drive and Evergreen Road.

Alternative 2

Under Alternative 2, during the weekday p.m. peak hour several segments of Oregon 214 are anticipated to experience an increase in vehicular volumes as compared to Alternative 1. The widening of Oregon 214 between Butteville Road and Oregon 99E is the major contributing factor because the increase in capacity would attract vehicles from minor roadways. As with Alternative 1, decreases in the vehicle volumes on Crosby Road and Front Street result from the Evergreen Road and Stacy Allison Drive extensions.

Alternative 3

Similar to Alternative 2, Oregon 214 is anticipated to experience higher volumes under Alternative 3 than Alternative 1. The traffic volume increases on Oregon 214 would be a result of widening the roadway to a five-lane cross-section. Crosby Road would experience slight increases in volumes resulting from its upgrade to a minor arterial standard. Settlemier Avenue would experience increases in vehicle volumes from the construction of the South Arterial. Projected decreases in the traffic volumes on Front Street and Butteville Road are attributable to the increased connection provided by the Stacy Allison Drive and Evergreen Road extensions.

Roadway Performance

Table 5-2 projects the number of lane miles that would operate under, near, and over capacity in the year 2020 for each alternative.

TABLE 5-2
2020 Roadway Segment Performance (Miles [percent of total])

Lane Miles	No Build	Alternative 1	Alternative 2	Alternative 3
Under Capacity	85.15 (68%)	94.21 (71%)	105.81 (76%)	110.67 (77%)
Near Capacity	29.02 (23%)	28.48 (22%)	29.43 (21%)	28.31 (20%)
Over Capacity	11.83 (9%)	9.83 (7%)	4.55 (3%)	4.51 (3%)

Table 5-2 indicates that more than 90 percent of the lane miles on the system are projected to operate under or near capacity in the year 2020 in all scenarios. However, the proposed Southern Arterial and the widening of Oregon 214 between Butteville and Oregon 99E (as included in Alternatives 2 and 3) would significantly reduce the number of lane miles forecast to operate over capacity.

As documented in Section 4, several intersections are anticipated to operate near or over capacity under year 2020 No Build conditions. Table 5-3 depicts the projected volume-to-capacity ratios projected at key intersections for each alternative scenario.

A signal warrant analysis was conducted for the unsignalized intersections that are projected to exceed capacity under the three alternatives. This analysis is presented in Appendix F.

TABLE 5-3
Comparison of Key Intersection Operations (volume-to-capacity [v/c])

Intersection	No Build	Alternative 1	Alternative 2	Alternative 3
Butteville Road/Oregon 219 (north)	> 1	0.81	0.77	0.79
Butteville Road/Oregon 219 (south)	> 1	0.83	0.73	0.74
Woodland/Oregon 219	0.76	0.56	0.73	0.63
I-5/Oregon 214 northbound ramps	0.86	0.54	0.61	0.53
I-5/Oregon 214 southbound ramps	0.91	0.63	0.62	0.59
Evergreen Road/Oregon 214	> 1	0.66	0.77	0.71
Oregon Way/Oregon 214	0.77	0.59	0.73	0.69
Cascade Drive/Oregon 214	0.27	0.85	0.85	0.85
Boones Ferry Road/Oregon 214	> 1	0.74	0.85	0.81
Meridian/5th/Oregon 214	> 1	0.64	0.60	0.46
Front Street/Oregon 214	> 1	0.70	0.76	0.26
Park Avenue/Oregon 214	> 1	0.58	0.55	0.77
Oregon 99E/Oregon 214	> 1	0.85	0.77	0.76
Cleveland Street/Oregon 99E	> 1	0.67	0.47	0.41
Hardcastle Street/Front Street	> 1	0.59	0.25	0.32
Lincoln Street/Front Street	> 1	0.79	0.38	0.32
Garfield/Young Street/Front Street	> 1	0.78	0.40	0.40
Cleveland Street/Front Street	> 1	0.83	0.27	0.26
Boones Ferry Road/Crosby	0.69	0.58	0.31	0.52
Parr Road/Settlemier Road	0.95	0.78	0.22	0.79

Alternative 1

In addition to the roadway segment improvements included in this alternative, intersection mitigation measures would be required to meet ODOT's mobility standards. These improvements include:

- Installing a signal and a southbound right-turn lane at northern Butteville Road/Oregon 219 intersection
- Installing a signal and a northbound right-turn lane at southern Butteville Road/Oregon 219 intersection
- Adding a southbound left-turn lane at the Boones Ferry Road/Oregon 214 intersection
- Installing a signal at the intersection of Meridian Drive/5th Street/Oregon 214

- Installing a signal at the Front Street/Oregon 214 intersection
- Signalizing and adding a southbound left-turn lane at the Park Avenue/Oregon 214 intersection
- Adding a southbound right-turn lane, a westbound right-turn lane, and a westbound left-turn lane to the Oregon 99E/Oregon 214 intersection
- Signalizing the Cleveland Street/Oregon 99E intersection
- Adding a southbound left-turn lane to the Hardcastle Street/Front Street intersection
- Adding a westbound left-turn lane to the Lincoln Street/Front Street intersection
- Adding a southbound left-turn lane to the Cleveland Street/Front Street intersection

With these improvements, all intersections are projected to operate acceptably during the weekday p.m. peak hour. The Cascade Drive/Oregon 214 and Oregon 99E /Oregon 214 intersections would operate at a volume-to-capacity ratio of 0.85, which just meets the mobility standard.

Alternative 2

In addition to the identified roadway segment improvements, intersection mitigations would be required to provide acceptable operations. The required improvements include:

- Installing a signal and a southbound right-turn lane at northern Butteville Road/Oregon 219 intersection
- Installing a signal and a northbound right-turn lane at Butteville Road/Oregon 219 intersection
- Adding a northbound right-turn lane, a southbound left-turn lane and an eastbound right-turn and through lanes to the Boones Ferry Road/Oregon 214 intersection
- Signalizing the intersection of Meridian Drive/5th Street/Oregon 214
- Signalizing the Park Avenue/Oregon 214 intersection
- Adding a southbound right-turn lane and a westbound left-turn lane to the Oregon 99E/Oregon 214 intersection
- Installing a signal at the Cleveland Street/Oregon 99E intersection

These mitigations are projected to provide acceptable operations for the weekday p.m. peak hour.

Alternative 3

Additional intersection mitigations would also be required under Alternative 3 to meet ODOT's standards. The required improvements would include:

- Installing a signal at the northern intersection of Butteville Road and Oregon 219
- Installing a signal and a northbound right-turn lane at Butteville Road/Oregon 219 intersection

- Adding a southbound left-turn lane and a westbound right-turn lane to the Boones Ferry Road/Oregon 214 intersection
- Installing a signal at the intersection of Meridian Drive/5th Street/Oregon 214
- Adding a westbound left-turn lane to the Oregon 99E/Oregon 214 intersection
- Signalizing the Cleveland Street/Oregon 214 intersection; and
- Adding an eastbound right-turn lane to the Parr Road/Settlemier Road intersection

With these improvements, all intersections are projected to operate acceptably during the weekday p.m. peak hour. The Cascade Drive/Oregon 214 and Boones Ferry Road/ Oregon 214 intersections are projected to operate at a volume-to-capacity ratio of 0.85, which just meets the mobility standards.

Based on the operational analysis, Alternative 1 represents the minimum improvements necessary to meet system requirements. Alternative 2 is the preferred alternative to meet the City's long-term transportation goals, while Alternative 3 is desirable, but is dependent on coordination with Marion County. Alternative 2 balances the need for operational and mobility improvements with the constraints of funding and coordination with other jurisdictions. Over the next 20 years, it is the City's priority to coordinate with Marion County to provide an extension of Crosby Road to Goudy Gardens and Oregon 99E, and to extend the southern arterial from Oregon 99E to Oregon 214. The improvements provide needed east-west connections and an alternative route to the Oregon 214/I-5 interchange area.

Transit System Alternatives

Today, the Woodburn fixed route bus service has an annual ridership of approximately 32,000 passengers. The paratransit system has an estimated annual ridership of 6,000 to 7,000 passengers. Compared to the ridership reported in the 1995 TSP, ridership on the fixed route system has increased by approximately 10 percent during the last 8 years whereas the paratransit ridership has nearly doubled.

The population in Woodburn is projected to increase from 20,210 (source: year 2000 census) to approximately 35,000 people in year 2020. This represents a population increase of approximately 73 percent. For the purposes of the TSP, it was conservatively assumed that transit ridership will grow in proportion with the population increase and that increased transit service will be provided to serve the added population. A combined annual ridership of about 66,000 passengers would use the City's fixed route and paratransit systems.

The existing fixed route system operates from 9:00 a.m. to 5:00 p.m. Monday through Friday. Approximately 50 scheduled stops are provided at various locations on the route. As documented in Sections 3 and 4, the majority of major employment, civic, retail and neighborhood centers are being served by the fixed route system today. Some notable exceptions to this are the employment center southwest of the I-5/Oregon 214 interchange and the Woodburn Industrial Park located in the Progress and Industrial corridors.

TABLE 5-5
TDM Strategies

Strategy	Development Applicability	Site Design Consideration	Employer Policy	Developer/ Employer Parking Reduction Incentives	Cost	Potential Impact on Trip Reduction
Tele-commuting	S, O	No	Yes	Potentially	Minimal	Moderate
Transit-Oriented Developments	C, S, O, I	Yes	No	Yes	Can be minimal with proper site planning	Can be high if tied to other TDM measures

C – Commercial, S – Services, O – Office, I – Industrial.

It is recommended that priority implementation be focused on the following strategies:

- Provide transit fare subsidies when the transit system is improved to incorporate the peak periods.
- Establish carpool matching programs for ride-sharing.
- Schedule shift changes to occur outside of peak travel periods.
- Allow employees to work at home 1 day a week.
- Establish neighborhood commercial and mixed-use nodes within the City. As part of these developments, direct sidewalk connections, bus stop provisions, and proper building orientation provide opportunities for trips to be made by way of walking, cycling, or driving very short distances.

Alternatives Analysis Summary

The following is a summary of the alternative analysis for the transportation modes serving the City.

Roadway

Based on the operational analysis, Alternative 1 represents the minimum improvements necessary to meet system requirements. Alternative 2 is the preferred alternative to meet the City's long-term transportation goals, while Alternative 3 is desirable, but is dependent on coordination with Marion County. Alternative 2 balances the need for operational and mobility improvements with the constraints of funding and coordination with other jurisdictions. Over the next 20 years, it is the City's priority to coordinate with Marion County to provide an extension of Crosby Road to Goudy Gardens and Oregon 99E, and to extend the southern arterial from Oregon 99E to Oregon 214. The improvements provide needed east-west connections and an alternative route to the Oregon 214/I-5 interchange area.

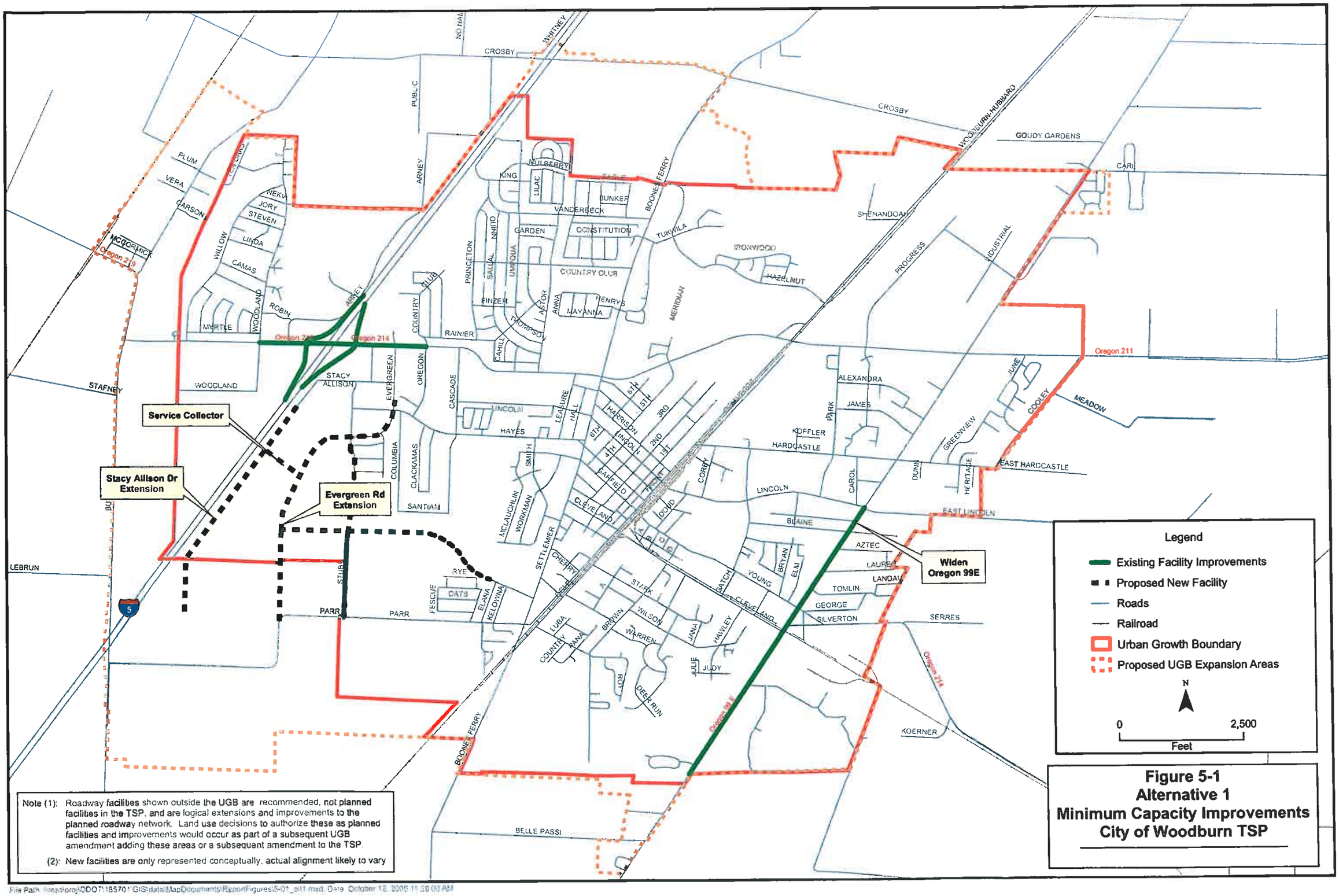

Figure 5-1
Alternative 1
Minimum Capacity Improvements
City of Woodburn TSP

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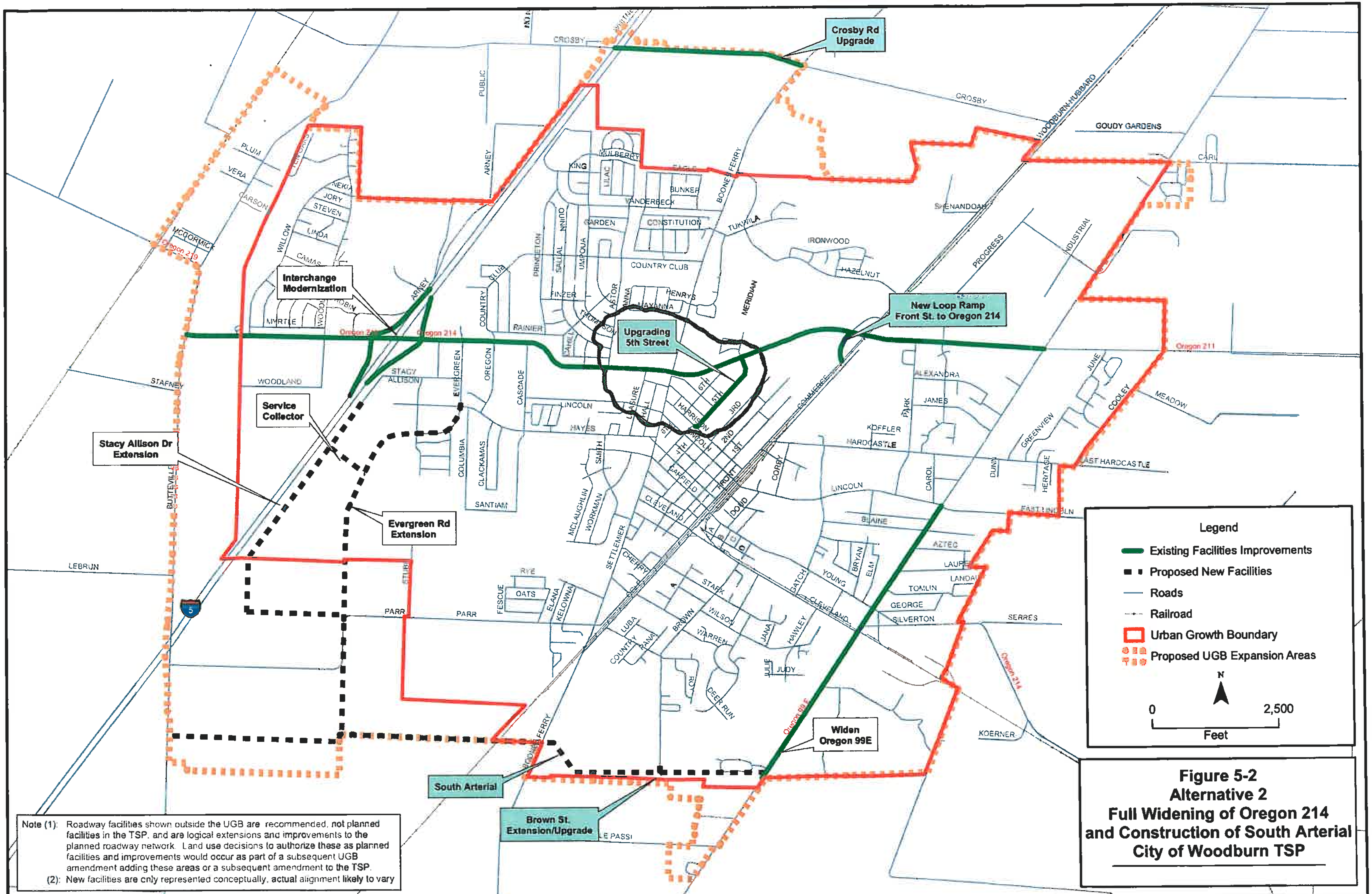
Crosby Rd Upgrade
Interchange Modernization
Upgrading 5th Street
New Loop Ramp Front St. to Oregon 214
Service Collector
Stacy Allison Dr Extension
Evergreen Rd Extension
Widen Oregon 99E
South Arterial
Brown St. Extension/Upgrade
CROSBY
GOUDY GARDENS
WOODBURN-HUBBARD
PUBLIC
ARNEY
PLUM
VERA
CARSON
MCCORMICK
Oregon 219
WILLOW
NEKIA
JORY
STEVEN
LINDA
CAMAS
MYRTLE
ROBIN
Oregon 214
Oregon 211
STAFNEY
WOODLAND
STACY ALLISON
LEBRUN
BUTTEVILLE
PARR
EVERGREEN
OREGON
CASCADE
COLUMBIA
CLACKAMAS
SANTIAM
COUNTRY CLUB
KING
MULBERRY
LILAC
BUNKER
VANDERBECK
GARDEN
CONSTITUTION
QUINN
PRINCETON
SALIAL
UMPQUA
FINZER
ASTOR
ANNA
HENRYS
RAINIER
BOONES FERRY
TUKWILA
IRONWOOD
HAZELNUT
MERIDIAN
SHENANDOAH
PROGRESS
INDUSTRIAL
CARL
ALEXANDRA
JAMES
PARK
KOFFLER
HARDCASTLE
EAST HARDCASTLE
JUNE
COOLEY
MEADOW
GREENVIEW
HERITAGE
DUNN
CAROL
LINCOLN
EAST LINCOLN
HAYES
SMITH
LASURE
HALL
HARRISON
6TH
5TH
3RD
2ND
1ST
FRONT
COMMERCE
CORBY
GARFIELD
CLEVELAND
DOUD
MCLAUGHLIN
WORKMAN
SETTLEMIER
CHERRY
RYE
OATS
FESCUE
ELANA
KELOWNA
STARK
WILSON
BROWN
WARREN
LUBA
COUNTRY
PANA
JANA
HAWLEY
JULIE
JUDY
ROY
DEER RUN
YOUNG
GATCH
BRYAN
ELM
BLAINE
AZTEC
LAUREL
LANDAU
TOMLIN
GEORGE
SILVERTON
SERRES
KOERNER
STUBB
Oregon 99E
LE PASSI
Legend
Existing Facilities Improvements
Proposed New Facilities
Roads
Railroad
Urban Growth Boundary
Proposed UGB Expansion Areas
N
0
2,500
Feet
Note (1): Roadway facilities shown outside the UGB are recommended, not planned facilities in the TSP, and are logical extensions and improvements to the planned roadway network. Land use decisions to authorize these as planned facilities and improvements would occur as part of a subsequent UGB amendment adding these areas or a subsequent amendment to the TSP.
(2): New facilities are only represented conceptually, actual alignment likely to vary

Figure 5-2
Alternative 2
Full Widening of Oregon 214 and Construction of South Arterial
City of Woodburn TSP

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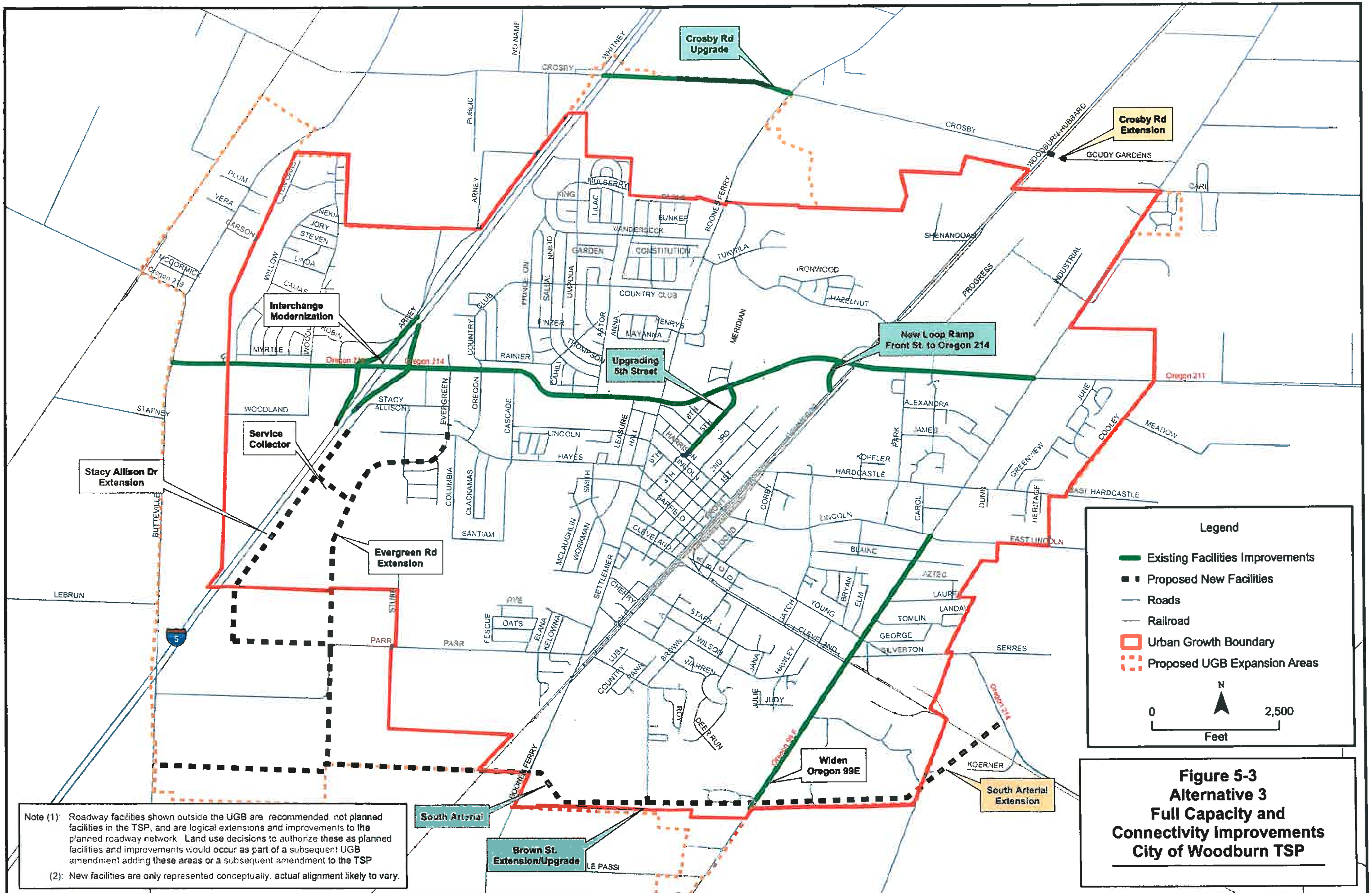

Figure 5-3
Alternative 3
Full Capacity and Connectivity Improvements
City of Woodburn TSP

Note (1): Roadway facilities shown outside the UGB are recommended, not planned facilities in the TSP, and are logical extensions and improvements to the planned roadway network. Land use decisions to authorize these as planned facilities and improvements would occur as part of a subsequent UGB amendment adding these areas or a subsequent amendment to the TSP.

(2): New facilities are only represented conceptually, actual alignment likely to vary.

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